

**CONVERTIBLE PATIENT ISOLATION POD**

This is a continuation of U.S. patent application Ser. No. 09/780,569, filed on Feb. 12, 2001, currently pending, which claims the benefit of U.S. provisional Application Serial No. 60/181,464, filed on Feb. 10, 2000.

**I. TECHNICAL FIELD**

The present invention is a single patient isolation pod. The inventive pod is for transport of a patient and provides convertibility between a mode protecting the patient against undesired additional exposure to a hazardous environment and a mode protecting against contamination of others by the isolated patient.

**II. BACKGROUND OF THE INVENTION**

There are many devices and structures available in the art for isolating a patient for protection against additional exposure to a hazardous environment while monitoring the patient as well as isolating the potentially infectious patient from caregivers to prevent exposure and/or contamination. Many such devices are directed to use in an individual patient who is exposed to ambient contamination from for example, chemical, biological, infectious agent, environmental, and radiation sources. NBC patient wraps (Nuclear, Biological, Chemical) are currently available to medical and military personnel but do not contemplate or provide for access to a wrapped patient by healthcare providers. After applying a conventional chemical wrap, only the face and some of the neck of a patient is visible and readily accessible to the caregiver. Such wraps incorporate relatively unsophisticated boundary barriers and are most commonly used in "Hot Patient/Cold Environment" and "Hot Patient"/"Hot Environment" situations. Much more secure, expensive and unwieldy are microbiological containment systems directed to use with Level 4 biohazards, such as the Vickers Isolette, a containment system used by the U.S. Army Medical Research Institute of Infectious Diseases Aeromedical Isolation Team. Not only is the Vickers Isolette unit expensive, but as is typical of the contemplated functionality of such units, it particularly contemplates a "Hot Patient/Cold Environment" scenario.

Another prior art device, one intended to prevent further harm to a casualty from exposure to a "hot" environment is the transportable life support system disclosed in U.S. Pat. No. 5,626,151. That device, a mobile intensive care for acute management of trauma victims, is highly electronic with sophisticated patient monitoring and environmental control capabilities and is intended for transport of individual casualty, military field.

U.S. Pat. No. 5,975,081 also describes an individual patient, self-contained, transportable life support system. That prior art device contemplates isolation of a patient from a "hot" environment as well as isolation of a "hot patient" from caregivers particularly during transport. The system incorporates substantial and sophisticated electronic monitoring and patient environment controls which are sealed within a chamber established by a transparent, rigid canopy, sealed in an airtight manner to the supporting base. The system includes a self-contained oxygen generator to dispense with the need for communication of air between the isolation chamber and the ambient environment.

A further example of a containment/isolation system is illustrated in U.S. Pat. No. 5,341,121. This device is directed specifically for isolation of a "hot" item/contaminant, e.g., biohazards, infectious cadavers, etc. and contemplates use for

transport thereof. More particularly, the structure of the device is established by affixing in a tubular form flexible, transparent, plastic sheeting to comprising flaps/portions including edges sealable with ZIP LOC® closures and incorporating cuffs to receive and retain flexible rods that establish a supporting frame. The resulting enclosure provides a shielded isolation chamber. As disclosed, the isolation device may include access ports incorporating gloves suitable for the intended purpose of the device as well as sealable sample pouches, integrated waste pouches, etc. Although the isolation unit may include iris ports for insertion and removal of articles from the chamber, consistent with the purpose of the unit, it does not disclose or contemplate provisions for maintaining a live patient.

The prior art also contains numerous disclosures of "Cold Patient"/"Hot Environment" protective suits used throughout the military and civilian complexes. However, such suits are not configured to provide a system of connections/switches/valves to provide for nearly instantaneous selection and convertibility between one or the other needs. Furthermore, the prior art does not present a single isolation device capable of use in any of the various scenarios:

Hot Patient/Hot Environment;  
Hot Patient/Cold Environment; and  
Cold Patient/Hot Environment.

By selecting the appropriate locations relative to the pod of this invention for structures such as the "glove-box" gloves permits the caregiver ready access to the isolated patient for important interventions such as advanced airway management, regardless of the particular environment of the caregivers. Likewise, the prudent location of the blower unit/control valves/also ensures against contaminant saturation particularly around the patient's face and minimizes contamination saturation in "dead zones" commonly found in the use of chemical wraps. Furthermore, patient isolation can be achieved rapidly and easily with the invention which contemplates the use of an air impermeable zipper(s) that allows for the patient to be isolated once sealed. Furthermore, the pod according to this invention may include handles (plastic, fabric, etc.) integrated with the patient support to facilitate patient manipulation particularly in the case of field use in a hostile environment without the need of ancillary equipment such as a stretcher.

**III. SUMMARY OF THE INVENTION**

It is the object of the present invention to provide an individual patient contamination isolation pod that overcomes problems and improves over the teachings of the prior art.

It is also an object of this invention to provide effective short term, emergency patient isolation for either Hot Patient/Cold Environment and Cold Patient/Hot Environment.

The invention provides a patient isolation system that permits health care providers relatively unencumbered access to the isolated patient.

It is an object of the invention to improve delivery of advance medical procedures and airway management.

It is another object of the invention to provide a pod with a convertible ventilation system that is easily reconfigured by use of one way airway valves disposed at each end of the pod.

Another object of this invention is to provide an emergency, short-term, single patient, isolation pod utilizing lightweight materials and airtight sealing.

These and other objects of the invention are satisfied by an isolation pod for an individual patient, comprising:

a flexible, transparent air impermeable sheet like member defining at least a first and second end, said first end and said